

THE PEZOMACHINI OF NORTH AMERICA.¹

By E. H. STRICKLAND.

The following paper is based mainly on the unnamed collection of the genus *Pezomachus* belonging to the U. S. National Museum, which was very kindly lent to me during the spring of 1911. The bulk of the collection of 317 specimens was composed of two species, namely: *Pezomachus flavocinctus* Ashm. 112 specimens ♂ and ♀, and *Pezomachus nigrellus* Ashm. 60 specimens ♂ and ♀. The former proved to be the most interesting since the hitherto undescribed male yielded a unique condition of polymorphism, fully described later in the description of the species, and in several cases a hyperparasite, *Hemiteles* sp. was bred from the same egg cocoons as individuals of this species. Many other already described species of *Pezomachus* were represented as were also 12 apparently new species. I am also indebted to Mr. H. L. Viereck of the National Museum for a small collection containing one new species, and to Dr. W. E. Britton, State Entomologist of Connecticut for a similar collection containing two new species of *Pezomachus* and one new *Thaumatotypus*.

In working these over I found several cases in which two distinct species had received the same name, while some cases of wrong generic determination were noticed, which in the following pages I have attempted to correct.

My thanks are due to Mr. C. T. Brues for help received in generic determinations.

The tribe *Pezomachini* of Ashmead² included all Cryptines in which the metathorax is not areolated, or at most with only a transverse carina, and consisted of the following genera.

Thaumatotypus Förster.

Cremnodes Förster.

Apterophygus Förster.

Aptesis Förster.

Theroscopus Förster.

Pezomachus Grav.

Pezolochus Förster.

Hemimachus Ratz.

¹Contributions from the Entomological Laboratory of the Bussey Institution, Harvard University, No. 45.

²Proc. U. S. Nat. Mus. Vol. XXIII, p. 36 (1900).

In 1907 Schmiedeknecht³ limited the tribe to only such Cryptines as are entirely wingless in the ♀ (none of which have an areolated metathorax), and have no scutellum in this sex. This reduces the tribe to the following known genera.

Thaumatotypus Förster.

Pezomachus Grav.

Pezolochus Förster.

all of which are represented in North America.

Three species of the genus *Pezomachus* fall into a group so distinctive that I have proposed a sub-genus *Micromeson*, herein described, to include them.

The discarded genera of the tribe are now distributed as follows:

Cremnodes, *Apterophygus* and *Theroscopus* are now included in the genus *Hemiteles* Grav. and the genus *Hemimachus* is now sunk in *Pezomachus*; while the species of *Aptesis* are included some in *Microcryptus* Ratz. and some in *Hemiteles*.

There are no valid records of any of these genera, as they were then defined, being represented in America, with the possible exception of *Aptesis* the two described American species of which must now probably be included in *Microcryptus*. The three species placed in the genus *Cremnodes* by Ashmead and Harrington must be transferred to *Thaumatotypus*, while of the four species placed by Ashmead in *Theroscopus* three, namely *T. americanus*, *T. kukakensis* and *T. rufipes* belong to the genus *Pezomachus* while the fourth, *T. popofensis* was described from a single winged male and cannot therefore be, with certainty, placed in this genus.

The three genera of *Pezomachini* Schmied. can be separated as follows:

1. Second abdominal segment very large covering $\frac{3}{4}$ of the entire length of the hind body, connate with the third segment. Petiole much longer than the metathorax..... *Thaumatotypus* Forst
- Second abdominal segment not covering $\frac{3}{4}$ of the hind body, not connate with the third segment. Petiole rarely much longer than the metathorax. 2
2. Face much abbreviated *Pezolochus* Grav.
- Face of normal length..... *Pezomachus* Grav.

The subgenera of *Pezomachus* sens, lat. can be separated as follows:

Prothorax much swollen in both sexes so that it is at least as long as the mesonotum along the median line. Petiole long and unusually slender.

Subgenus *Micromeson*

Prothorax not abnormally enlarged, shorter along median line than the mesonotum; petiole considerably expanded apically. Subgenus *Pezomachus*

³Die Hymenopteren mitteleuropas. Gustav Fischer, Jena. (1906).

Although I have only separated out this one subgenus of *Pezomachus* it is evident when one is working over a quantity of material that there are several well defined groups of species in this genus which would suggest that though the species, especially in the female sex are very similar, this genus may in reality consist of degenerate forms from more than one genus or even tribe. Unfortunately the species recognized in the male sex, which would probably have more distinctive characters, are much fewer than those now described in the female sex and in only nine American species have the males and females been correlated.

KEY TO THE SPECIES OF *Thaumatotypus*.

1. Antennæ 18-jointed..... 2
- Antennæ 16-jointed; petiole striate, piceous species..... *spinulatus* sp. nov.
2. Head and abdomen rufous, thorax, testaceous..... *canadensis* Harr.
Not so coloured..... 3
3. Petiole striate, metathoracic teeth acute..... *alaskensis* Ashm.
Petiole smooth, or with median line, metathoracic teeth not prominent
tuberculatus Ashm.

KEY TO THE NEW SPECIES OF *Pezomachus* HERE DESCRIBED.

FEMALES.

1. "Metathoracic" carina entirely absent; piceous species; length 4 mm... *P. utahensis*
- "Metathoracic" carina indicated, either completely or only laterally.... 2
2. Ovipositor not more than half as long as the petiole..... 3
- Ovipositor at least about the same length as the petiole..... 4
3. Antennæ 19-jointed, abdominal pubescence dense; bicolored species
ferruginous and black; length 3.5 mm..... *P. brevistylus*
- Antennæ 17-jointed, abdominal pubescence sparse, piceous species, length
1.5 mm..... *P. minutus*
4. Ovipositor not much longer or shorter than the petiole..... 5
- Ovipositor $1\frac{1}{2}$ times as long as the petiole; length of species 5 mm..... *P. longistylus*
5. Abdominal pubescence rather long, moderately dense, antennæ 17-jointed
piceous species, length 2 mm..... *P. robustus*
- Abdominal pubescence short..... 6
6. Abdominal pubescence dense..... 7
- Abdominal pubescence sparse..... 10
7. Metathorax viewed from the side subconical, thorax fuscous, with black
blotches, length 4 mm..... *P. maculatus*
- Metathorax normal..... 8
8. Petiolar spiracles so prominent that the general outline of the petiole is
altered, sharply bi-colored species, head and abdominal apex black,
remainder yellow..... *P. coloradensis*
- Petiolar spiracles not at all prominent..... 9
9. Meso- and meta-thorax sub-equal from above, densely pubescent. Black
species, length 4.5 mm..... *P. longipes*
- Mesothorax much shorter than "metathorax" the latter always with a
median groove..... *P. standfordensis*
10. Petiolar spiracles so prominent that the general outline of the petiole is
altered..... 11
- Petiolar spiracles only slightly prominent..... 12

11. Spiracles on large thick conical projections; antennæ 18-jointed, length of species 2.5 mm. *P. spiraculus*
Spiracles not exceptionally prominent; yellow-ferruginous species, with piceous bands on the abdomen; length 4.5 mm. *P. dispar*.
12. Small species, 2.5 mm., antennæ 21-jointed, petiole very short and broad. *P. pennsylvanicus*
Larger species, 4 mm. or more. 13
13. Ferruginous with third and following abdominal segments piceous, in sharp contrast to the rest of the body; length 4 mm. *P. similis*
Ferruginous with fourth and following abdominal segments piceous; third piceous at base, but broadly ferruginous at apex. Length 5 mm. *P. nodosus*

MALES.

1. Wings fully developed. 2
Fore wings partially developed, hind wings absent. *P. flavocinctus* Ashm.
Wings absent. 4
2. Carina roughly semicircular. 3
Carina sinuous, abdomen densely pubescent. *P. flavocinctus* Ashm.
3. Piceoferruginous species with the petiole and segments two and three luteous. *P. similis*
Piceoferruginous species with well defined apical yellow bands on the petiole and second abdominal segment. *P. dispar*
4. Pubescence dense. 5
Pubescence sparse. 7
5. Carina complete, sinuous. 6
Carina incomplete, antennæ about 22-jointed. *P. nigrofuscus*
6. Antennæ about 29-jointed, fuscous species though abdominal segments often with narrow yellow apical bands. *P. flavocinctus*
Antennæ about 27-jointed, head thorax and petiole ferruginous, remainder of abdomen black. *P. manni*
7. Piceous black species with golden yellow legs. *P. auripes*
Ferruginous species with a partially piceous abdomen. *P. ottawaensis* Harrington

SUB GENUS *Micromeson*.

FEMALES.

1. Clear ferruginous species with piceous abdominal bandings. Face somewhat sunken between the eyes. Length 6-6.5 mm. *P. annulatus*
2. Fuscous species with piceous abdominal bandings. Face level with the eyes, length 6-6.5 mm. *P. lymensis*
3. Pale honey yellow species, length 4 mm. *P. texanus* Cress

***Thaumatotypus spinulatus*, sp. nov.**

Female. Length 4 mm. Piceous black with very stout fuscous legs and antennæ. Entirely clothed with rather sparse, long outstanding hairs. Petiole very long. Ovipositor stout.

Head from above transverse, this is due to its marked shallowness as it is but little wider than the thorax, rectangular, the margined vertex being slightly excavated; deep black and rather coarsely shagreened. Face rather long, greatly swollen below the antennæ so that this portion projects beyond the eyes. Malar line indistinct, half as long as the width of the face at the lower corners of the eyes. Eyes small, about as long as the malar line, internal margins converging above. Clypeus transverse with a rather large deep fovea on either side. Mandibles testaceous, apparently bifid, teeth black. Antennæ short and very stout, 16-jointed, as long as the head and thorax together, rather densely clothed with a short pubescence.

Thorax short and broad. Mesonotum piceous, similarly shagreened to the head, somewhat gibbous and with an obsolete median furrow. No indication of a scutellum. "Metathorax" black, strongly declivous posteriorly. Transverse carina incomplete medially but with the apophyses produced into extremely prominent projections, which gives the posterior face of the "metathorax" a concave appearance. There are two longitudinal carinae on either side. Surface rather coarsely shagreened and clothed with long white outstanding hairs.

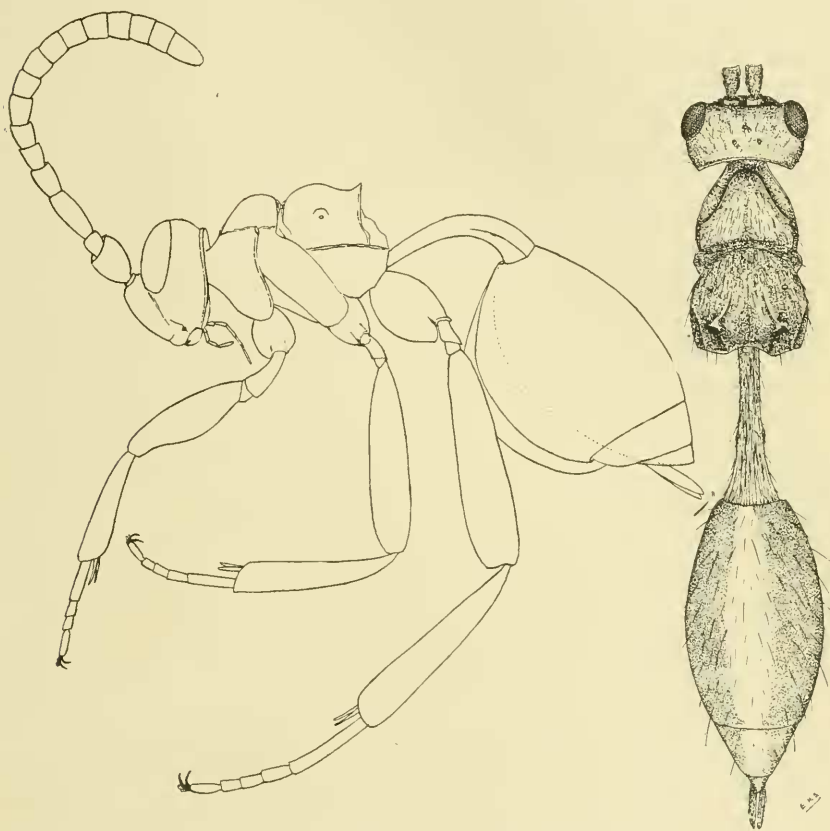


Fig. 1. *Thaumatotypus spinulatus*.

Petiole very long and not much expanded, as long as the thorax, strongly aciculate and with but slightly projecting spiracles. Remainder of abdomen elliptical, with the apex sharply pointed. Surface black, smooth and shining, with a sparse long pubescence. Second segment greatly enlarged, covering $\frac{3}{4}$ of the length of the abdomen, the third segment covers most of the remainder. The apex of the fourth is all that is exposed of the remaining segments. There is an indefinite testaceous band near the apex of each segment. Viewed from the side the dorsal sclerites are seen to be much produced below the body of the

abdomen, and the free margins of the second segment meet on the ventral side of the abdomen. Ovipositor about as long as the third segment, sheaths stout, testaceous and densely pilose. Legs very stout but rather long. The swollen femora and tibiae are piceous black and are densely pubescent. The tarsi, which are quite normal in structure are of a more rufo-testaceous color. Ungues simple.

Described from a single specimen taken at New Haven, Conn., by A. B. Champlain on the 20th of May, 1911.

I am rather doubtful as to the genus in which this species should be placed as in Försters description of *Thaumatotypus* he has "Scutellum distinct". In this species, however, the scutellum is not indicated.

As the generic description was drawn up on a single species and the present specimen agrees with it in all other particulars, notably in the much enlarged second abdominal segment, I have placed it provisionally here.

Schmeideknecht places the genus in the *Pezomachini* and it is probable that he has seen the type so it may be that Försters original description was not correct in this detail.

Pezomachus utahensis sp. nov.

Female. Length 4 mm. Head thorax and abdomen shining black. Antennae and legs piceous. Metathorax strongly gibbous, without a carina. Petiolar spiracles rather prominent.

Head, from above about twice as wide as thick along the median line, minutely punctulate, shining. Ocellar triangle small. Lateral ocelli nearer to the median ocellus than to the eye margins. Face entirely black, obtusely carinate medially from the insertion of the antennae to the base of the clypeus. Clypeus transverse, malar line obsolete, about half as long as the face is wide. Inner eye margins parallel and straight. Mandibles and palpi piceous. Antennae piceous above, lighter below, slender.

Thorax uniformly and closely punctulate, shining. Prothorax rather large, closely connate with mesothorax, suture obsolete; testaceous on median line. Mesothorax rather larger than metathorax, scutellum indicated by a rounded though rather large and prominent tubercle. Tegular tubercles prominent and testaceous. "Metathorax" strongly gibbous, posterior face abruptly declivous. Coxae black, remainder of legs piceous.

Petiole rather short and broad, evenly widened from the base to the apex except for where the rather prominent spiracles cause a small tubercle. Closely punctured, and with an obsolete median furrow. Remainder of abdomen oval, about $2\frac{1}{2}$ times as wide as the thorax. Segments closely and evenly punctured, and with a sparse pubescence. Ovipositor about as long as the petiole, testaceous with fuscous sheaths.

Observations. Described from a single specimen taken at Park City, Utah. Type in the National Museum.

***Pezomachus brevistylus* sp. nov.**

Female. Length 3.5 mm., ferruginous, with apical half of the abdomen piceous; short and robust with a much abbreviated ovipositor; entire body rather densely pubescent.

Head from above ferruginous, finely shagreened and pubescent, about twice as wide as thick along the median line. Antennæ short and stout, 19-jointed; scape and first few flagellar joints ferruginous, remainder piceous, seventh and neighboring flagellar joints not quite twice as long as thick. Face below antennæ somewhat swollen, subtuberculate, clypeus semi-circular, indefinitely separated basally; malar lines distinct, about 1-3 as long as the face is wide at the lower angles of the eyes. Mandibles yellowish.

Thorax distinctly bi-nodose, ferruginous with a short rather dense pubescence. Scutellum hardly indicated, mesothoracic tegulae small but prominent; "metathoracic" carina poorly defined medially but prominent laterally. Legs ferruginous, hind legs infuscated at apex of the femora and over most of the tibiae.

Abdominal petiole short and broad, spiracles moderately prominent, surface ferruginous and shagreened; with a fine short pubescence; remainder of the abdomen short oval, second segment ferruginous, following segments piceous, surface punctulate, entirely clothed with a dense short pubescence. Ovipositor very short, about one-third the length of the short petiole; sheaths piceous.

Observations. Described from a single specimen taken at Philadelphia. Closely related to *P. ashmeadii* (*Cremnodes californicus* Ashm.), but readily distinguished by its color and more definite carina. Both of these species fall into a very distinctive group of *Pezomachini* the most distinctive characters of which are the shortened robust form of the body together with the much abbreviated ovipositor, and it is possible that these characters will be found to be of sub-generic value.

***Pezomachus minutus* sp. nov.**

Female. Length 15 mm. Entirely piceous black, petiole short and broad at the apex. Ovipositor short.

Head transverse, temples swollen, about $2\frac{1}{2}$ times as wide as thick along the median line. Surface polished though very finely punctured. Face below antennæ more coarsely punctured and hairy, produced forward immediately below the insertion of the antennæ, so that the latter are placed on a small horizontal ledge. Malar line distinct, about one-third the width of the face. Clypeus poorly defined, transverse. Mandibles and palpi piceous, concolorous with remainder of the face. Antennæ sub-clavate, piceous, entirely pilose, 17-jointed, reach to apex of petiole. Seventh and neighboring flagellar joints about $1\frac{1}{4}$ times as long as wide.

Thorax not distinctly bi-nodose; uniformly and finely punctured. Scutellum entirely absent. Tegular tubercles very prominent. "Metathorax" as long as mesothorax, with a definite semi-circular carina, behind which it is abruptly truncate. Legs not stout, concolorous with the thorax.

Petiole short, about $\frac{3}{4}$ as broad as the apex is long; spiracles not prominent; finely and uniformly punctured. Remaining abdominal segments very shining, with a sparse pubescence and a very fine punctulation. Ovipositor short about $\frac{1}{2}$ the length of the petiole, luteus with dusky sheaths.

Observations. Described from a single ♀ taken at St Pauls Island. This species shows a relationship to *P. ashmeadii* and *P. brevistylus* in the shortened form and abbreviated ovipositor. Type in the National Museum.

***Pezomachus longistylus* sp. nov.**

Female. Length 5 mm. head and thorax ferruginous; abdominal segments piceous basally, yellowish apically. Ovipositor much elongate, about $1\frac{1}{2}$ times the length of the petiole.

Head from above somewhat rectangular, the margined occiput but little excavated; surface shagreened and of a deep ferruginous color. Antennæ longer than the head and thorax together, 24-jointed, slender; seventh and neighboring flagellar joints almost twice as long as thick; scape somewhat yellowish, apical third of flagellum piceous. Face ferruginous, rather long, malar lines distinct, about one-third as long as the face is wide at the lower angles of the eyes. Clypeus not very distinctly separated, mandibles yellowish with piceous teeth; labium prominent, yellow.

Thorax bi-nodose, somewhat slender, its surface evenly shagreened; scutellum poorly defined; "metathorax" somewhat gibbose, with a delicate complete transverse carina. Legs elongate ferruginous.

Abdominal petiole with prominent spiracles; width at apex about three times that at the base; surface finely shagreened, base ferruginous, apex yellowish; remainder of abdomen oval with surface finely shagreened and clothed with a sparse pubescence, all segments piceous basally, second segment yellow apically. On the third and following segments the yellow is gradually replaced by ferruginous. Ovipositor much elongated, almost $1\frac{1}{2}$ times the length of the petiole, sheaths piceous black.

Observations. Described from a single perfect specimen in the National Museum. Habitat and time of capture not noted. It somewhat resembles *P. micariae* Howard.

***Pezomachus robustus* sp. nov.**

Female, length 2 mm. A robust piceous species, with short, stout antennæ and rather thick legs. "metathoracic" carina present but indefinite. No spiracular tubercles on the petiole.

Head large, from above rectangular, about twice as wide as thick along the median line; surface rather coarsely shagreened. Face swollen below the insertion of the antennæ, and of a lighter color than the vertex. Malar lines distinct, not quite half as long as the face is wide, between the lower angles of the eyes. Clypeus not very well defined basally, the free margin is almost semi-circular. The antennæ are short and stout, composed of 17 joints, of which the seventh and neighboring flagellar joints are only slightly longer than wide. The basal half of the antennæ is of a lighter brown colour than the head.

Thorax distinctly bi-nodose, clothed with a sparse pubescence rather coarsely shagreened. The scutellum is absent. The "metathoracic" carina is poorly defined especially medially. The legs are stout, not very long, and somewhat lighter in color than the thorax.

The abdominal petiole is short and evenly widened from the base to the apex, which is squarely truncate. The spiracles are not prominent. The surface is somewhat aciculate and dotted with an outstanding pubescence. Remainder of abdomen ovoid, shining, with a rather long pubescence. Ovipositor about as long as the petiole, with dusky sheaths.

Observations. Described from a single specimen taken at Tucson, Arizona, by H. G. Hubbard.

This species is similar in general appearance to a small *nigrellus* (Ashm.) but can be at once distinguished by the more robust form and shorter antennæ.

***Pezomachus maculatus* sp. nov.**

Female. Length 4 mm. Bicolored; ferruginous and black; head and abdomen, except petiole, black from above. Thorax mainly ferruginous, but with black blotches, especially on the pleuræ. Legs piceous with lighter colored patches, "metathorax" abnormally gibbose, indefinitely carinate. Thorax and abdomen densely pubescent.



Fig. 2. *Pezomachus maculatus*.

Head from above coarsely shagreened; with small ocelli which are placed in a large equilateral triangle. The color is piceous black with flecks of dull ferruginous. Antennæ long and slender, 20-jointed, apex

piceous, base ferruginous, first three flagellar joints with basal and apical yellow bands. Face ferruginous, shagreened, transverse. Malar lines indistinct at eye ends, more prominent towards the clypeus, about one-third as long as the face is wide between the lower angles of the eyes. Mandibles rather yellowish, palpi piceous-black.

Mesothorax robust, rather short; with a well defined median sulcus, and a small obsolete scutellar tubercle. The surface is rather coarsely shagreened, and clothed with a moderately dense pubescence. The prevailing color is ferruginous, but there is a definite pre-scutellar piceous spot on the mesonotum, and the pleuræ have two piceous patches on both sides. The "metathorax" is very strongly gibbose; sub-conical, when viewed laterally; the carina is poorly defined. The surface is rather coarsely shagreened and clothed with a moderately dense pubescence. Anterior to the carina the "metathorax" is ferruginous, but on the posterior and lateral faces it is piceous. The legs are long, and piceous, for the greater part, but mottled with dusky yellow, which color is most prominent at the bases of the joints.

Abdominal petiole ferruginous, rather closely shagreened, and pubescent. The spiracles are prominent. Remainder of abdomen ovate deep black, and densely pubescent. Ovipositor long, 1 mm. sheaths piceous.

Observations. Described from a single specimen taken at Point Loma San Diego, California, by P. Leonard. Type in the collection of the Bussey Institution, Harvard University.

This is a very remarkable species which is readily distinguished by its abnormally convex "metathorax" and curiously mottled legs.

***Pezomachus coloradensis* sp. nov.**

Female. Length 4 mm. Ovipositor .75 mm. Very distinctly bicolored species as follows: Head black, entire thorax, legs, petiole and second and third abdominal segments light ferruginous; remainder of abdomen black.

Face ferruginous below the insertion of the antennæ, and slightly so above, along the eye-margins. Mandibles yellow at the base, apical half ferruginous, teeth black. Palpi yellow. Antennæ dusky above, rather more yellowish below, rather long and slender with seventh flagellar and neighboring segments about $1\frac{1}{2}$ times as long as wide. Head from above shagreened, slightly pilose, transverse, over twice as broad as thick along the median line.

Thoracic nodes sub-equal. Mesothorax with a poorly defined median furrow, most distinct just before the slightly raised scutellar area. The "metathoracic" carina which is broadly hastate in form is poorly defined except laterally. The legs, especially the hind ones, are rather more dusky than the thorax.

The petiole is about three times as wide at the apex as it is at the base, but does not widen much after the rather prominent spiracles, it is

somewhat constricted immediately behind these; the entire surface is finely and evenly punctured. The remainder of the abdomen is oval, finely and evenly punctured with a short but rather dense pubescence. Segments 2 and 3 are sub-equal in length and sharply contrasted in color with the remaining black segments. The ovipositor and sheaths are piceous.

Observations. Described from a single ♀ specimen taken in Colorado. Type in the National Museum.

***Pezomachus longipes* sp. nov.**

Female. Length 4.5 mm. Piceous black, densely pubescent, species. Legs very long and slender.

Head from above about twice as wide as thick along the median line, piceous, surface shagreened, not shining, ocelli very small. Antennæ piceous throughout, slender but rather short, 23-jointed, the 7th and neighboring flagellar joints not quite twice as long as thick. Face below antennæ somewhat swollen, piceo-ferruginous, clothed with a rather long pubescence, especially on the clypeus. Clypeal suture obsolete. Malar lines distinct, about half as long as the face is wide at the lower angles of the eyes. Cheeks not swollen.

Thorax piceous black, uniformly shagreened, about three times as long as wide, nodes sub-equal. Mesothorax densely pubescent, tegulæ small but prominent, no indication of a scutellum. "Metathorax" more sparsely pubescent and more shining than the mesothorax. The carina is sinuous and poorly defined medially. Legs long and slender, the hind femora reaching almost to the apex of the abdomen, piceous black and clothed with a dense short pubescence.

Petiole piceous black with an indefinite and variable ferruginous apical band, densely pubescent, evenly widened from the base to the apex, spiracles not prominent. Remainder of abdomen ovate, black, sub-shining though closely punctate and clothed with a dense short pubescence. Ovipositor and sheaths black, somewhat longer than the petiole.

Observations. Described from two specimens taken at Stanford University, California, by William M. Mann, Feb., 1910, and Harold Morrison, Dec., 1910. This species resembles *P. cockerelli* Brues but is readily separated by the presence of the metathoracic carina.

Type in the collection of the Bussey Institution, Harvard University.

***Pezomachus stanfordensis* sp. nov.**

Female. Length 4 mm. Shining black, antennæ, legs, mesothorax and extreme apex of petiole usually lighter in color. Abdomen with a rather dense pubescence. "Metathorax" and usually mesothorax also, with an obsolete median furrow.

Head from above quadrate, temples somewhat narrower than the eyes, rather less than twice as broad as thick along the median line, surface dull black, finely shagreened. Ocelli small, lateral ones nearer to the median ocellus than to the eye margins. Antennæ stout 19-jointed, the seventh and neighboring flagellar joints hardly longer than thick, color ferruginous to dusky with the apex piceous. Face below antennæ short, with the distinct malar lines about a quarter as long as the face is wide at the lower angles of the eyes, mainly ferruginous but with a piceous spot on either side between the bases of the antennæ and the malar line. Clypeal suture poorly defined. Mandibles ferruginous with piceous teeth.

Thorax short and shining though finely shagreened and with a sparse pubescence. Mesothorax piceous, much shorter than the black "metathorax", usually with a poorly defined median furrow. Scutellum not indicated. "Metathorax" with a complete though not very prominent carina, and with a more definite median furrow than on the mesothorax. Legs not very long, rather densely pubescent, color variable from light dusky to piceous black, in the latter case the joints between the coxa and trochanter, and the trochanter and femora, are distinctly lighter than the remainder of the leg.

Petiole piceous black, not very elongate, evenly expanded to the apex which is sometimes indefinitely ferruginous. Spiracular tubercles absent. Remainder of abdomen ovate, shining black, sometimes with apices of all segments slightly tinged with clear ferruginous, rather densely pubescent on the second and third, but more sparsely on the remaining segments. Ovipositor and sheaths piceous, about as long as the petiole.

Observations. Described from two specimens taken by William M. Mann, at Stanford, Cal., on Nov. 23, 1909, and Jan. 5, 1910.

This species resembles *Pezomachus obesus*, Ashm. but is larger and stouter and has a very much shorter mesothorax.

Type in the collection of the Bussey Institution, Harvard University.

***Pezomachus spiraculus* sp. nov.**

Female. Length 2.5 mm. A small robust species, piceous black, except for the antennæ, pro- and mesothorax, legs and petiole, which are dusky ferruginous. Petiolar spiracles abnormally prominent, placed on stout tubercles. "Metathorax" carinate.

Head from above not transverse, piceous and rather coarsely shagreened. Antennæ 18-jointed, fuscous basally, piceous at the apex, short and stout, with the seventh and neighboring flagellar joints about one and a half times as long as thick. Face swollen below the insertion of the antennæ, malar lines black, not quite half as long as the face is wide at the lower angles of the eyes, the inner margins of which diverge slightly below the insertion of the antennæ. Clypeus normal. Mandibles lighter in color than the rest of the face, with black teeth.

Thorax robust, binodose, with the nodes subequal and similar. Mesothorax fuscous somewhat gibbose, with no scutellum indicated. Its surface is coarsely punctulate. "Metathorax" piceous, strongly gibbose, with the carina indistinct medially, but well defined laterally; it is sharply declivous behind the carina and this portion bears two longitudinal carina on each side. Surface dull and coarsely shagreened before the carina, but shining behind. The legs are stout and dusky.

The petiole is dusky and very stout. It is flattened dorsally and is somewhat aciculate, laterally are two very prominent tubercles which bear the spiracles. The remainder of the abdomen is ovate, piceous black and shiny, with a sparse pubescence. Ovipositor ferruginous with piceous sheaths; about the same length as the petiole.

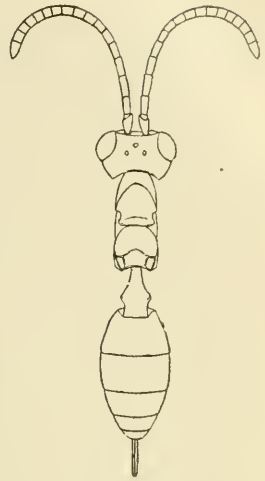


Fig. 3. *P. spiraculus*.

Observations. Described from a single specimen taken at Round Knob, N. Carolina.

This species is easily recognized by its abnormally large petiolar tubercles. Type in the National Museum.

Pezomachus dispar sp. nov.

Three specimens, 2 ♂ ♂ and 1 ♀ of undescribed species of *Pezomachus* were bred from a spider's egg capsule taken at Twining, Maryland. The ♀ differed considerably in color from the ♂ ♂ but this appeared to be an insufficient reason for dissociating the sexes. It is proposed however to make the ♂ the type of the species, placing the ♀ provisionally with it till further evidence determines whether this is a valid correlation or not.

Male. Length 5.5 mm., fully winged; slender, head, thorax and abdomen piceous except for a divided ferruginous spot on the anterior portion of the mesothorax and yellowish apical bands on the first three abdominal segments. Legs dusky yellow.

Head from above transverse, piceous though more ferruginous round the eye margins; ocelli large, antennae long and slender, 27-29-jointed; yellowish at base, mainly dusky. Face below antennae ferruginous, malar lines distinct short, about $\frac{1}{4}$ to $\frac{1}{3}$ as long as the face is wide at the lower angles of the eyes. Mandibular teeth transparent, palpi dusky.

Mesothorax well developed, surface shagreened, rather coarsely on disc, more finely laterally; clothed with a short pubescence. Parapsidal furrows well defined anteriorly, the space between them is of a fer-

ruginous color except for a narrow median piceous line; remainder of thorax piceous. Scutellum and wings well developed. "Metathorax" rather coarsely shagreened with a well defined semi-circular carina. Legs, including coxæ dusky luteous.

Abdominal petiole long and slender, but little expanded at the apex; spiracles prominent; piceous, with a definite yellow apical band. Remainder of abdomen slender, second segment with a broad apical yellow band, third segment with or without a definite apical band. Remaining segments entirely piceous and more shining. Surface shagreened, with a rather long pubescence. Claspers small.

Female. Length 4.5 mm. Yellow ferruginous except for narrow indefinite basal bands on the abdominal segments.

Head from above somewhat transverse, ferruginous, but more yellowish round the eye margins. Antennæ (broken) long and slender, the scape and first three flagellar segments are luteous. Face below antennæ swollen medially. Malar lines distinct, about one-third as long as the face is wide at the lower angles of the eyes; mandibles yellowish with piceous teeth, palpi yellow.

Thorax yellow ferruginous evenly shagreened, about $2\frac{1}{2}$ times as long as wide. Mesothorax with an obsolete median furrow and no indication of a scutellum. "Metathorax" somewhat gibbose with a delicate but complete carina, which is most definite laterally. Legs dusky luteous.

Abdominal petiole with rather prominent spiracles, apex almost three times as wide as the base, surface finely shagreened, color ferruginous, more yellow at apex. Remainder of abdomen oval, segments piceous at the base merging through ferruginous to honey-yellow at the apex, clothed with a moderately sparse pubescence. Ovipositor elongate luteous, sheaths dusky at the apex.

The ♀ is much like that of *micariæ* How. but is lighter in color and has more prominent petiolar spiracles.

Type of ♂, and ♀ from which this description is drawn, in National Museum.

***Pezomachus pennsylvanicus* sp. nov.**

Female. Length 2.5 mm. A small, slender, fuscous species, with a very short and broad petiole. Antennæ rather long and slender. Ovipositor as long as the petiole.

Head from above rather globose though the occiput is excavated. Surface coarsely rugose. Ocelli small. Face rather broad, malar line distinct, about one-third as long as the face is wide. Antennæ 21-jointed; seventh and neighboring flagellar joints about $1\frac{1}{2}$ times as long as wide. Color fuscous throughout. Clypeus not very well defined. All mouth parts colored as the rest of the head, but mandibular teeth rather more piceous.

Thorax uniformly fuscous, nodes sub-equal. Mesothoracic tegulæ prominent. No indication of a scutellum. "Metathoracic" carina poorly defined, but the somewhat gibbous metathorax is abruptly declivous behind its situation. Legs uniformly rufous brown.

Petiole rather yellow at the apex, short, about $1\frac{1}{4}$ times as long as broad at the apex. Base broad, but not half the width at the spiracle, beyond which the petiole widens but little. The spiracles are not very prominent. Remainder of the abdomen elongate oval, uniformly brown with a sparse short pubescence. Ovipositor as long as, or slightly longer than, the petiole. The surface of the abdomen, including the petiole, is shining and only shallowly shagreened.

Observations. Described from a single bred specimen collected by Kirby and Champlain at N. Cumberland, Pa., 11-27-'09

***Pezomachus similis* sp. nov.**

The female measures about 4 mm., stout, ferruginous except for apical half of the abdomen which is shining piceous. "Metathoracic" carina indistinct, though apophyses are prominent. Abdominal pubescence sparse.

The male measures about 5 mm. long and slender, fully winged in all specimens seen. The head thorax and legs ferruginous as in ♀, but the petiole and at least the second and third abdominal segments are luteus, remaining segments piceous as in ♀. Metathoracic carina distinct, semi-circular. Abdominal pubescence rather dense.

Female. Length 4-4.5 mm. Head from above ferruginous and finely shagreened; about twice as wide as thick along the median line. The margined occiput is not very deeply excavated. Ocelli small and rather far apart, the lateral ones are about as far from the median as from the eye margins. Antennæ long and slender, entirely ferruginous, 25-jointed. Face rather transverse, malar line not very distinct, about one-third as long as the face is wide at the lower angles of the eye margins. Clypeus transverse, mandibles rather flavous at the base, with two shining rufous apical teeth. Palpi ferruginous.

The thoracic nodes are sub-equal, the surfaces are shagreened and sparsely pubescent. Mesothorax with a distinct median groove. Scutellum indicated by a small rounded tubercle. "Metathorax" rather gibbose, the carina is poorly defined medially, but the apophyses are distinct and appear as two short horizontal lines. Legs long, dusky-ferruginous.

Petiole and second abdominal segment ferruginous, the remaining segments are piceous. The entire surface is finely shagreened and shiny, with a sparse short pubescence. The petiole is about $3\frac{1}{2}$ times as broad at the apex as at the base. Spiracles sub-prominent. Ovipositor ferruginous. Sheaths piceous except at the base where they are yellowish.

Male. Length 5 mm. Head from above transverse, about $2\frac{1}{2}$ times as wide as thick along the median line. Ocelli very large. The occiput is not very deeply excavated. The antennæ are slender and as long as the body, about 28-jointed. Face similar to that of the ♀ but the clypeus is deeper and therefore less transverse.

Thorax entirely ferruginous. The mesothorax is well developed with distinct parapsidal grooves on its apical half, which slightly converge caudad. The surface is finely shagreened with a short, not very

sparse pubescence. The scutellum is large. "Metathorax" rather small and flat with a well defined roughly semicircular carina, and rather prominent straight lateral carinae. Wings well developed. Legs long and slender, ferruginous.

Abdomen elongate and slender. Petiole and segments 2 and 3 and sometimes part of segment 4 luteus; remainder piceous. Surface shagreened, with rather a dense pubescence. Petiole long and slender, but little dilated at the apex which is only about $1\frac{1}{2}$ times as wide as the base, spiracles rather prominent. Genital claspers small.

Types in the National Museum.

Described from 4 ♀ and 5 ♂ bred from egg capsules of *Algalena naevia* taken at Twining, Maryland, issued Feb. 14 and 15th.

The females are much like those of *P. flavocinctus* Ashm. but have less pubescent abdomens and only 25 joints to the antennae.

***Pezomachus nodosus* sp. nov.**

Female, length 5 mm. Color ferruginous with metathoracic disc, base of the third abdominal segment, the whole of the fourth and remaining segments piceous. "Metathoracic" carina complete, not prominent.

Head from above about twice as wide as thick along the median line, surface finely shagreened, occiput rather deeply excavated. Ocelli small, lateral ones about equidistant from the median ocellus and the eye margins. Antennae long and slender, at least 21-jointed (broken) rather more dusky in color than the rest of the head. Seventh and neighboring flagellar joints about $2\frac{1}{2}$ times as long as wide. Face not transverse, cheeks rather swollen; malar line distinct, about one-third as long as the face is wide between lower angles of the eyes. Clypeal suture not very definite. Mandibles ferruginous with piceous teeth. Palpi long and ferruginous.

Thorax rather coarsely shagreened, with a sparse pubescence. Mesothorax elongate, with a broad shallow median furrow and a vaguely defined scutellum. "Metathorax" gibbose, declivous both anteriorly and posteriorly, rather more piceous than the mesothorax on the disc. Carina complete but not very prominent. Legs long and rather fuscous.

Petiole not very elongate, about three times as wide at the apex as at the base, spiracles sub-prominent. Remainder of abdomen ovate. Second segment rather yellow-ferruginous at apex, third piceous at base. The remaining segments and ovipositor sheaths are piceous. The entire surface of the abdomen is shining, obsoletely shagreened and with a sparse pubescence.

Observations. Described from a single specimen taken at Lawrence, Kansas, by Hugo Kahl, on June 19th, 1896. It somewhat resembles *P. ottawaensis*, Harrington in color and the form of the carina, but is much more binodose.

Type in the National Museum.

***Pezomachus flavocinctus* Ash.**

♀ Proc. U. S. Nat. Mus. Vol. 12, p. 421. .

♂ The male of this species is polymorphic, the specimens seen however fall into two main categories, namely (1) winged (2) wingless, while a single specimen was found in which the mesothoracic wings were present, but much smaller than normal, while the metathoracic pair were entirely absent.

There is very little uniformity in details in this species but in general appearance and color members of both categories are very similar.

The most constant characters are:

1. The antennæ, which are long and slender, and always about 29-jointed.
2. The general shape of the head, which is about twice as broad as thick along the median line, is finely shagreened and has a sparse pubescence. The ocelli however, are inconstant in size.
3. The "metathoracic" carina. This is not very prominent but is always somewhat as shown in the figure, though it may be less angular.
4. The legs are all rather long and slender, with very small simple unguis.
5. The abdomen is densely pubescent in all forms and is mainly fuscous in color. The petiole and following two or three segments may have dull yellow apical bands.

The most inconstant characters are:

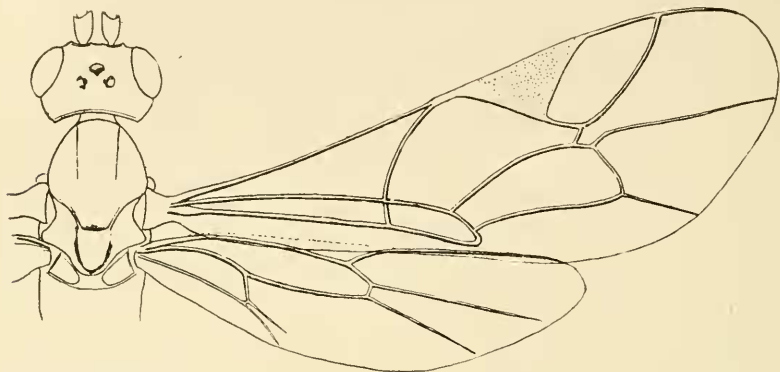
1. Ocelli. These are usually large in winged forms and quite small in wingless forms, but this correlation is not entirely constant.
2. Mesothorax. The development of this varies immensely with the presence or absence of wings. The "scutellum" also is very large in winged forms, but tuberculate in wingless forms.
3. The petiole. The spiracles may be, and usually are, tuberculate, but in some specimens they are hardly if at all prominent. This is in no way correlated with the presence or absence of wings.
4. The size of the individual. Winged forms are typically the larger and vary in length from 4.5-5 mm. Some specimens however, are much more slender than others. The wingless forms vary from 3.5 to 5 mm. in length. They are all slender, but some are more so than others.

Typical winged form.

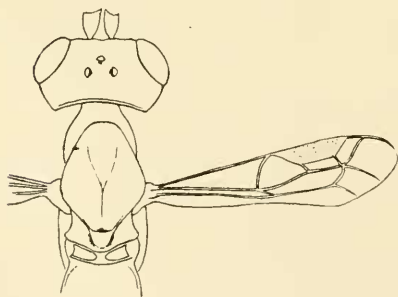
Length 4.5 mm. Fully winged. Color mainly fuscous, but abdominal segments may have narrow yellow apical bands. Pubescence short and dense especially on the abdomen.

Head from above finely shagreened, about twice as wide as thick along the median line. Occiput not very deeply excavated. Ocelli usually very large, placed on a somewhat raised triangle. The lateral ocelli nearer to the median than to the eye margins. Antennæ long and slender, about 29-jointed; apex piceous, in some specimens this color extends almost to the base. Seventh and neighboring flagellar segments about $2\frac{1}{2}$ times as long as broad. Face rather lighter in color than the vertex. Malar line distinct about $\frac{1}{4}$ to $\frac{1}{3}$ as long as the face is wide as the lower end of the parallel inner eye margins. Clypeus transverse with a distinct basal fovea separating it from the remainder of the face. Mandibles bidentate, concolorous with, or a little more yellow than, the remainder of the head. Teeth somewhat darker. The face may have a longitudinal median swelling running from the insertion of the antennæ to the base of the clypeus, at which point it is widest.

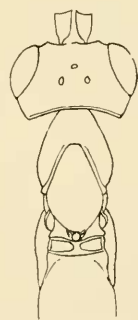
Mesothorax well developed and rounded, with more or less well defined parapsidal grooves. Surface finely and evenly shagreened and clothed in a rather dense short pubescence. Color rather variable, mainly dark fuscous. The space between the parapsidal grooves may be of a somewhat lighter color than the lateral portions and there may be a distinct still lighter median line. Scutellum very large and well defined. Wing veins testaceous. The brown stigma has a very conspicuous white basal spot which extends on to the costa. "Metathorax" with a distinct complete hind carina. Surface rather more coarsely



Fully Winged ♂



♂ with Vestigial Wings.



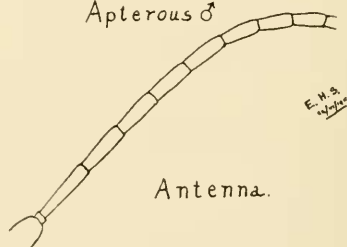
Apterous ♂



Types of Petiole.



Metathoracic Carina



Antenna.

Eig. 4. *Pezomachus flavocinctus*.

shagreened than that of the mesothorax, especially behind the carina; pubescence more sparse, especially on the disc, but distinctly longer. Legs long and slender, rather lighter in color than the thorax. Fore and mid legs inclined to be testaceous. Petiole long and slender with rather prominent spiracles, behind which the sides are parallel. Remainder of abdomen slender, terminating with broad testaceous claspers. The color of the abdomen is variable, but is mainly fuscous; the petiole and following two or three segments may have dull yellow or whitish apical bands. The entire surface is closely punctulate and covered with a rather dense pubescence.

Observations. Described from 22 specimens taken at Twin-ing, Maryland.

Form with rudimentary wings.

Head, "metathorax," legs and abdomen as in winged form. Mesothorax reduced in size; with a much smaller scutellum. The poorly defined parapsidal grooves are widely separated anteriorly but meet at about the middle of the mesonotum continuing to the scutellum as a single median shallow groove. They thus resemble together the letter Y. Mesothoracic wings small, extending to about the middle of the second abdominal segment. They were much crumpled in the specimen but the venation was apparently not very abnormal. The arcolet was missing and there was an extra recurrent vein from the somewhat contorted stigma. The metathoracic wings were entirely missing.

Observations. Described from a single specimen from Twin-ing, Maryland. This specimen was bred from an egg nest from which also emerged, one fully winged male, one apterous male and one female.

Wingless form.

Similar to winged forms except for the mesonotal structure. The ocelli also are always small. Mesonotum much narrower than the head, with a tuberculate scutellum. Parapsidal grooves, may be slightly separated anteriorly, usually only visible as a shallow posterior depression. The surface of the mesonotum is pubescent as in the winged form.

Observations. Described from about 30 specimens taken at Twining, Maryland, and from one taken at Cornell.

On an average these are much smaller than the winged forms which would suggest that their apterous condition is in some way connected with an insufficiency of food.

Both types of male were often bred from the same cocoon together with females which are much more constant in form than the males.

Types in the National Museum.

Paratypes (except brachypterous form) in the Bussey Institution, Harvard University.

The breeding labels show that the majority of these hatched out during the latter part of February, March and the first half of April, extra notes were given on three labels as follows:

1. "From egg capsule of *Prothesima* sp. Twining City, Md. iss. Dec. 28th, 1897. A. Busck coll."
The pin bore two wingless males.
2. "♀ iss. Feb. 22, 1898, laid same date one egg unfertilized. From this the ♂ issued April 21, 1898. A. B."
The pin bore 1 ♀ and 1 fully winged ♂.
3. "♀ issued Feb. 11, 1898. Oviposited unfertilized; male from the eggs issued April 20, 1898. A. B."
The pin bore one ♀ and one fully winged ♂.

This appears to be the only case of dimorphism in ♂ *Pezomachini* as yet noticed in this country, but there can be no doubt that this is perfectly valid, and it is probable that similar conditions will be found to exist in others of the species already described in one form, or in both forms under different names.

The condition of small mesothoracic wings being present, while the metathoracic wings are entirely suppressed as found in the intermediate form, is almost unique in the Hymenoptera. As far as I am aware the only analagous case is seen in ants. Professor Wheeler (Ants, their Structure, Development and Behavior, pp. 99 and 102) described and figures abnormal ant workers and soldiers, which he terms *Pterergates* in which mesothoracic wing rudiments have developed. In the Braconidæ, Chalcidoidea and Proctotrypoidea where forms with rudimentary wings are occasionally met with, and the mesothoracic wings are often reduced far more than in the species under consideration, it is always found that metathoracic wings are also present.

A *Hemiteles* sp. (hyperparasite ?) was in several instances bred out from the same egg capsules as this species.

***Pezomachus manni* sp. nov.**

Male. Length 4 mm. Wingless. Head, thorax and petiole ferruginous, remainder of abdomen black. Antennæ and legs piceous.

Head from above dusky ferruginous, finely rugose and with a very sparse pubescence. The small lateral ocelli are a little nearer to the median ocellus than to the eye margins. Antennæ piceous reaching to about the apex of the second abdominal segment, about 27-jointed, seventh and neighboring flagellar joints twice as long as thick. Face below antennæ ferruginous, malar lines distinct, short, hardly more than $\frac{1}{4}$ as long as the face is wide at the lower angles of the eyes. Clypeus transverse, truncate. Palpi dusky.

Thorax elongate and cylindrical, ferruginous, mesothorax and portion of "metathorax" behind the carina dusky ferruginous; surface shagreened, with a very sparse pubescence. Wing rudiments white, scutellum tuberculate. "Metathoracic" carina complete but poorly defined, feebly sinuous. Legs elongate and fuscous basally, all tarsi mid- and hind-femora and tibiae piceous.

Petiole but little expanded, elongate, ferruginous, finely shagreened and sparsely pubescent. Spiracles sub prominent. Apex about twice as wide as the base, and one-third the length of the petiole. Remainder of abdomen elongate, black, rather coarsely shagreened and with a moderately dense pubescence. Claspers small.

Observations. Described from a single ♂ specimen taken by Mr. William M. Mann from the nest of *Formica subpolita* Mayr. at Pacific Grove, California, June, 1909.

This species much resembles *P. macer* Cress. but has much shorter antennae and the abdominal coloring is quite distinctive. From *P. ottawensis* Harr. it is distinguished by the much more elongate petiole, and differently colored abdomen.

***Pezomachus nigrofuscus* sp. nov.**

Male. Length 4.5 mm. wingless, slender; head black, thorax and petiole fuscous; remainder of abdomen black with the exception of an apical yellow band on the second segment, moderately dense pubescence.

Head from above black, finely rugose and with a moderately dense pubescence; the small lateral ocelli are as far from the median ocellus as from the eye margins. Antennae about 22-jointed, scape fuscous; flagellum piceous above, but with numerous small silvery longitudinal lines on each segment, which have the appearance of white hairs. Ventrally the fifth to the ninth flagellar segments are somewhat fuscous. Face below the antennae somewhat swollen and lighter in color, malar lines distinct, short, hardly more than one-fourth as long as the face is wide at the lower angles of the eyes. Clypeus and cheeks piceous; mandibles yellowish with piceous teeth.

Thorax long and cylindrical; entirely fuscous, "metathorax" somewhat darker than the mesothorax, and more sparsely pubescent. Wing rudiments large and white; scutellum tuberculate; "metathorax" rather coarsely shagreened, carina incomplete on median area but well defined laterally, fore and mid-legs entirely fuscous, hind femora and tibiae more piceous.

Petiole but little expanded, spiracles not very prominent, surface shagreened, with a sparse pubescence, color fuscous with an indefinite yellowish apical band. Remainder of abdomen slender, piceous black, except for a yellow apical band on the second segment, surface rather coarsely shagreened and with a moderately dense pubescence. Claspers small.

Observations. Described from a single ♂ specimen taken at Philadelphia. Similar to *P. urbanus*, Brues, but smaller and distinguished by the dense abdominal pubescence.

Type in the National Museum.

***Pezomachus auripes* sp. nov.**

Male, length 3.5–4 mm., wingless. Shining black, with bright yellow legs.

Head from above rectangular, not transverse; occiput but slightly excavated, ocelli small. Antennæ about 21-jointed, piceous black, seventh and neighboring flagellar joints about twice as long as thick. Face shining black, closely and evenly shagreened, with a short whitish pubescence. Mandibles and palpi testaceous; malar line obsolete, about one-third as long as the face is wide.

Thorax finely and evenly shagreened, with a moderately sparse short pubescence; scutellum well defined, flat dorsally; tegulæ yellowish white. "Metathorax" with a well defined carina. Legs long and slender, bright yellow including the coxæ. Tarsi rather more dusky. Abdominal petiole short, closely and finely shagreened, with an even sparse pubescence. Spiracular tubercles absent. Remainder of abdomen shining, finely shagreened, sparsely pubescent, elongate oval, terminating with two much enlarged piceous black claspers.

Observations. Described from a single damaged specimen taken at St. Pauls Island, Alaska, by T. Kincaid (Harriman Expedition).

This is a very pretty and distinctive species; it much resembles Ashmead's description of *P. obesus* ♀ (Proc. Wash. Acad. Sci. Vol. 4, p. 192) drawn up from a female specimen taken in the same locality, and it seems probable that it will be found to be the male of this species.

Type in the National Museum.

***Pezomachus ottawaensis* Harrington.**

Female. Can. Ent. Vol. 28, p. 77.

Male, 5 mm. long, wingless. Head and thorax dull ferruginous, abdomen piceous with ferruginous petiole and similarly colored apical band on the second segment.

Head rather large, from above somewhat quadrate, finely shagreened with a short sparse pubescence, uniformly ferruginous, about twice as wide as thick along the median line. Antennæ long and slender, about 25-jointed. Pedicel and first two or three flagellar joints ferruginous, remaining joints piceous black. Malar line indistinct, short, about one-third as long as the face is wide at the lower angles of the eyes, eye margins parallel. Clypeus well defined; mandibles rather more yellowish than remainder of head; teeth piceous.

Thorax narrow, ferruginous, closely and evenly shagreened, sparse minute pubescence. Mesothorax rather strongly margined, with a broad shallow median furrow. Scutellum tuberculate. Tegulae white. "Metathoracic" carina angular, (i. e., not semi-circular or sinuous) well defined at the sides, but less distinct medially. Legs rather more dusky-ferruginous than the thorax, especially dark on the hind tibiae.

Abdominal petiole short and broad, typically ferruginous, but dusky in some specimens, as a rule without prominent spiracles, these however, may be placed on small projections, surface shagreened and sparsely pubescent. Remainder of abdomen narrow oval, piceous black except for a ferruginous apical band on the second segment; surface finely shagreened and with a sparse pubescence. Claspers piceous, rather small.

Observations. Described from six specimens bred from spiders nests taken in Connecticut (Linn, New Haven and Ridgefield) and from three specimens bred from a single nest taken in Pennsylvania (N. Cumberland).

Although these specimens were never actually bred out from the same nests as ♀ *ottawænsis* (Harrington) they were bred from nests taken from the same places as nests yielding specimens of the named female, and owing to their striking similarity in color and petiolar form there can be no doubt that they represent the ♂ of this species.

The specimens from which these were described have been sent to the State Entomologist, New Haven, Connecticut.

A winged specimen has been reported⁴ as the male of this species but no complete description was drawn up. The only data given was in the specific tables where the following identification characters were given, "Winged". "Black with segments two and three of abdomen yellowish". It would seem that this correlation was incorrect since such a male must be very unlike the ♀. The origin of this report cannot, unfortunately, be traced.

***Pezomachus ashmeadii* nom. nov.**

Cremnodes californicus Ashm.

The female of this species, described by Ashmead as *Cremnodes californicus*, Proc. Nat. Mus. Wash. Vol. XII, p. 420 (1889) is entirely wingless, and has no scutellum. Since Förster in his original description of the genus *Cremnodes* states "Der Mitteleib mit Flugelrudimenten und abgesetztem Schildchen...." this species must be removed to the genus *Pezomachus* in which the specific name "californicus" is preoccupied.

⁴C. T. Brues, Trans. Amer. Ent. Soc., Vol. XXIX, pp. 120 and 121.

Pezomachus bruesii nom. nov.*Pezomachus obesus* Brues.

The specific name "obesus" proposed by Brues (Bull. Wis. Nat. Hist. Soc. Vol. VIII, No. 2, p. 68) for a Massachusetts species was preoccupied by Ashmead (Proc. Wash. Acad. Sci. Vol. IV, p. 193) for an Alaska species.

A number of specimens of this species, taken at Twining, Maryland, were seen to vary from the typical form in that the whole body was of a ferruginous color with the exception of the apical half of the abdomen which was piceous black.

Pezomachus aciculatus nom. nov.*Pezomachus foersteri* Brues.

The specific name "foersteri" proposed by Brues (Bull. Wis. Nat. Hist. Soc. Vol. VIII, No. 2, p. 67) for a Texan species was preoccupied by Bridgeman (Trans. Ent. Soc. London, p. 343) for a British species.

Pezomachus ferruginosus nom. nov.*Pezomachus insolens* Brues.

The specific name "insolens" proposed by Brues (Bull. Wis. Nat. Hist. Soc., Vol. VIII, No. 2, p. 67) for a Washington species was preoccupied by Förster (Arch. f. Naturg. Vol. XVI, p. 130) for a Central European Species.

Pezomachus cressonii nom. nov.*Pezomachus gracilis* Cress.

The specific name "gracilis" proposed by Cresson (Can. Ent. Vol. 4, p. 63) for a Pennsylvania species was preoccupied by Förster (Arch. f. Naturg. Vol. XVI, p. 209) for a Central European Species.

Pezomachus insularis nom. nov.*Theroscopus rufipes* Ashm.

The St. Paul Island, Alaska species described as *Theroscopus rufipes* by Ashmead (Wash. Acad. Sci. Vol. IV, p. 191 1902) is wingless in both sexes and has not a true scutellum in the ♀. It must therefore be transferred to *Pezomachus* where the specific name "rufipes" is preoccupied by Bridgeman (Trans. Ent. Soc. Lond., p. 157, 1883) for a British species.

Pezomachus americanus* Ashm.**Theroscopus americanus* Ashm.**

This Virginian species described as *Theroscopus americanus* by Ashmead (Trans. Amer. Ent. Soc. Vol. 23, p. 211) also belongs to the genus *Pezomachus*.

Pezomachus kukakensis* Ashm.**Theroscopus kukakensis* Ashm.**

This species, described by Ashmead with the preceding, from Kakak Bay must also be transferred to *Pezomachus*.

***Micromeson* nov. Sub-genus of *Pezomachus*.**

Head large, wider than the thorax, but not very transverse. Antennæ of ♀ not very slender, longer and more slender in the ♂. Thorax sub-cylindrical. Prothorax greatly enlarged and swollen, larger than the much reduced mesothorax, the mesonotum of which only covers the median area of the basal half of the anterior thoracic node. Scutellum defined as a small indistinct tubercle in the ♀, but more definite in the ♂.

"Metathorax" strongly gibbous with no carina. Females apterous. Male apterous in only known species.

Petiole very long and unusually slender, somewhat longer than the "metathorax," with or without prominent spiracles. Ovipositor shorter than the petiole.

There are three species belonging to this group:

***Pezomachus texanus* (Cress.) Can. Ent. Vol. 4, p. 64.**

" ***annulatus* (sp. nov.)**

" ***lymensis* (sp. nov.)**

They fall into a class so distinct from the other named *Pezomachi* that they certainly deserve a separate subgeneric if not a new generic name.

The most conspicuous characters are:

1. The much reduced mesonotum, and correspondingly swollen prothorax.
2. The elongated, slender petiole, associated with the uncarinated "metathorax"

***Micromeson annulatum* sp. nov.**

Female 6-6.5 mm. A large conspicuous species with head and thorax entirely clear ferruginous. The abdomen is of a somewhat darker ferruginous color and has a very conspicuous black basal band on the third segment, and a less distinct one on the second segment. Remaining segments with very narrow inconspicuous apical bands.

Head from above shagreened, dull, not quite twice as wide and thick along the median line. Anterior, or facial, border rather concave and sunken between the eyes. The margined occiput is but slightly excavated. Antennæ 23-25 jointed, concolorous with the head, though rather more

dusky apically; rather longer than head and thorax together, not slender, seventh and neighboring flagellar joints about twice as long as wide. Clypeus transverse with deep fovea on either side. Malar lines indistinct, cheeks rather swollen, closely and evenly punctured. Mandibles bifid with dark teeth. Palpi rufous and rather long.

Thoracic nodes sub-equal, shining though finely punctured. The pro- and meso-thorax about the same length medially. Separated by a rather indistinct suture. Prothorax rather sharply constricted anteriorly to form a well defined neck. Mesothorax quite flat in front of scutellar suture. Scutellum indicated by an obsolete tubercle. "Metathorax" strongly gibbous, with no indication of a carina. Legs clear ferruginous, somewhat more dusky than the thorax.

Abdominal petiole as long as the "metathorax", only slightly expanded at the apex, with rather prominent spiracles; concolorous with ground color of remaining segments. Closely and evenly shagreened. Remainder of abdomen oblong oval $2-2\frac{1}{2}$ times as wide as the thorax, ferruginous, closely and evenly shagreened, and with a very sparse minute pubescence; second segment with an indefinite piceous basal band, third segment with a very conspicuous broad black basal band. Third and following segments with narrow black apical bands varying much in intensity.

Ovipositor somewhat shorter than the petiole. Sheaths dusky at the base and black at the apex.

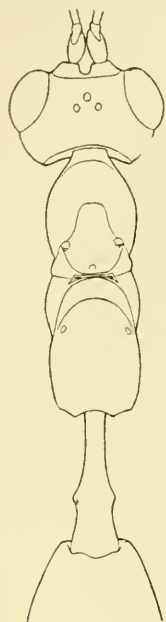


Fig. 5.
Micromeson
annulatum.

Observations. Described from 8 specimens taken at Twining, Maryland, in March and April. This is evidently closely related to *M. lymense* sp. nov. but is readily distinguished by the absence

of median furrows on the meso- and "meta"-thorax.

Type in the National Museum.

Paratype in the Bussey Institution, Harvard University.

***Micromeson lymense* sp. nov.**


Female 6-6.5 mm. A large conspicuous species, with head and thorax entirely fuscous. Abdomen fuscous with a conspicuous black base band on the third segment, and a less well defined similar band on the second segment. Mesothorax and "metathorax" medially sulcate.

Head from above shagreened, dull, with a very sparse pubescence; not quite as broad as thick along the median line. Anterior, or facial, border straight, level with the eyes, margined occiput but little excavated. Antennae about 24-jointed, concolorous with the head, rather longer than the head and thorax together. Seventh and neighboring flagellar segments about twice as long as broad. Clypeus transverse

with a deep fovea on either side. Malar lines indistinct, cheeks rather swollen, closely and evenly punctured. Mandibles bifid with dark teeth. Palpi fuscous with apical joint piceous.

Thoracic nodes sub-equal, rather coarsely punctulate; prothorax constricted anteriorly to form a neck, but not very markedly so. Mesothorax rather shorter than the prothorax, from which it is separated by a well defined suture. Scutellum indicated by a small tubercle. "Metathorax" strongly gibbous, with no indication of a carina but with a median shallow suture on anterior half. Legs rather more piceous than thorax.

Abdominal petiole as long as the metathorax, only slightly expanded toward the apex, but with rather prominent spiracles, evenly shagreened and very sparsely pubescent. Remainder of abdomen oblong oval, 2-2½ times as wide as the thorax, dark fuscous, closely and evenly punctured, and with a short very sparse pubescence. Second segment with an indefinite piceous basal band. Third segment with a conspicuous broad black basal band. Remaining segments unbanded. Ovipositor somewhat shorter than the petiole, sheaths light at the base, black at the apex.

Observations. Described from a single specimen hatched from a Drassid Egg Cocoon on May 7, 1911. Collected by A. B. Champlain, Lyme, Ct., April 30, 1911. 

This is evidently closely related to *M. annulatum* sp. nov. from which it can be readily distinguished by its darker color and sulcate thoracic nodes.

NORTH AMERICAN SPECIES OF THE GENUS THAUMATOTYPUS, FÖRSTER.

| | | | |
|------------------------------|---|---|---------------------|
| <i>alaskensis</i> Ashm. | ♀ | <i>Cremnodes alaskensis</i> Ashm. Trans. Am. Ent. Soc. Vol. 23, p. 211. | ALASKA. |
| <i>canadensis</i> Harrington | ♀ | <i>Cremnodes canadensis</i> , Harrington. Can. Ent. Vol. 24, p. 213. | QUEEN CHARLOTTE ID. |
| <i>spinulatus</i> sp. nov. | ♀ | | CONNECTICUT. |
| <i>tuberculatus</i> Ashm. | ♀ | <i>Cremnodes tuberculatus</i> Ashm. Trans. Am. Ent. Soc. Vol. 23, p. 211. | CALIFORNIA, |

NORTH AMERICAN SPECIES OF THE GENUS PEZOLOCHUS, GRAV.

| | | | |
|--------------------------|---|----------------------------------|-------------------|
| <i>bucculatrix</i> Ashm. | ♀ | Proc. Nat. Mus. Vol. 12, p. 421. | WASHINGTON, D. C. |
|--------------------------|---|----------------------------------|-------------------|

NORTH AMERICAN SPECIES OF THE GENUS PEZOMACHUS, GRAV.

| | | | |
|-----------------------------|---|--|--------------------|
| <i>aciculatus</i> nom. nov. | ♀ | <i>P. foersteri</i> Brues. Bull. Wis. Nat. Hist. Soc. Vol. VIII, No. 2, p. 69. | TEXAS. |
| <i>alternatus</i> Cress. | ♀ | Can. Ent. Vol. 4, p. 64. | ILLINOIS. |
| <i>alaskensis</i> Ashm. | ♀ | Proc. U. S. Nat. Mus. Vol. 12, p. 421. | ALASKA. |
| <i>americanus</i> Ashm. | ♂ | <i>Theroscopus americanus</i> Ashm. Trans. Am. Ent. Soc. Vol. 23, p. 211. | VIRGINIA. |
| <i>angularis</i> Brues | ♀ | Trans. Am. Ent. Soc. Vol. 29, p. 119. | TEXAS. |
| <i>ashmeadii</i> nom. nov. | ♀ | <i>Cremnodes californicus</i> Ashm. Proc. U. S. Nat. Mus. Vol. 12, p. 420. | CAL., COLO., UTAH. |
| <i>auripes</i> sp. nov. | ♂ | " | ALASKA. |
| <i>berkmani</i> Brues | ♀ | Trans. Am. Ent. Soc. Vol. 29, p. 119. | TEXAS. |

| | | | |
|--------------------------------|-----|---|-----------------------------|
| <i>bruesii</i> nom. nov. | ♀ | <i>P. obesus</i> Brues. Bull. Wis. Nat. Hist. Soc. Vol. VIII, No. 2, p. 71. | MASS., PA., CONN., MD. |
| <i>brevistylus</i> sp. nov. | ♀ | | PENNSYLVANIA. |
| <i>californicus</i> Ashm. | ♀ | Proc. U. S. Nat. Mus. Vol. 12, p. 421. | CALIFORNIA. |
| <i>canadensis</i> Cress. | ♀ | Can. Ent. Vol. 4, p. 62. | ONTARIO. |
| <i>cockerelli</i> Brues | ♀ | Bull. Wis. Nat. Hist. Soc. Vol. VIII, No. 2, p. 68. | FLORISSANT. |
| <i>coloradensis</i> sp. nov. | ♀ | | COLORADO. |
| <i>compactus</i> Cress. | ♀ | Can. Ent. Vol. 4, p. 63. | ILLINOIS. |
| <i>crassulus</i> Brues | ♀ | Trans. Am. Ent. Soc. Vol. 29, p. 119. | TEXAS. |
| <i>cressonus</i> nom. nov. | ♀ | <i>P. gracilis</i> Cress. Can. Ent. Vol. 4, p. 61. | PENNSYLVANIA. |
| <i>delumbis</i> Brues | ♀ | Bull. Wis. Nat. Hist. Soc. Vol. VIII, No. 2, p. 75. | WASHINGTON. |
| <i>dispar</i> sp. nov. | ♂ ♀ | | MARYLAND. |
| <i>ferruginosus</i> nom. nov. | ♀ | <i>P. insolens</i> Brues. Bull. Wis. Nat. Hist. Soc. Vol. VIII, No. 2, p. 74. | WASH., CAL. |
| <i>fenestralis</i> Brues | ♂ | Bull. Wis. Nat. Hist. Soc. Vol. VIII, No. 2, p. 67. | NEW JERSEY. |
| <i>flavocinctus</i> Ashm. | ♂ ♀ | Proc. U. S. Nat. Mus. Vol. 12, p. 421. | TEXAS, CONN., MD., N. Y. |
| <i>foveatus</i> Brues | ♀ | Bull. Wis. Nat. Hist. Soc. Vol. VIII, No. 2, p. 67. | MASSACHUSETTS. |
| <i>gentilis</i> Cress. | ♂ ♀ | Can. Ent. Vol. 4, p. 61. | PENNSYLVANIA. |
| <i>habilis</i> Brues | ♀ | Bull. Wis. Nat. Hist. Soc. Vol. VIII, No. 2, p. 67. | MASSACHUSETTS. |
| <i>insolitus</i> Howard | ♂ | Bull. Dept. Agric. Wash. Sec. Ent. Vol. 5, p. 33. | COLUMBIA. |
| <i>insularis</i> nom. nov. | ♂ ♀ | <i>Theroscopus rufipes</i> Ashm. Wash. Acad. Sci. Vol. 4, p. 191. | ST. PAUL ISLAND, ALASKA. |
| <i>keenii</i> Harrington | ♀ | Can. Ent. Vol. 26, p. 214. | CANADA. |
| <i>kukakensis</i> Ashm. | ♀ | <i>Theroscopus kukakensis</i> Ashm. Wash. Acad. Sci. Vol. 4, p. 191. | KUKAK BAY, ALASKA. |
| <i>longipes</i> sp. nov. | ♀ | | CALIFORNIA. |
| <i>longistylus</i> sp. nov. | ♀ | | |
| <i>macer</i> Cress. | ♂ | Can. Ent. Vol. 4, p. 64. | PENNSYLVANIA. |
| <i>maculatus</i> sp. nov. | ♀ | | CALIFORNIA. |
| <i>maculicollis</i> Brues | ♀ | Trans. Am. Ent. Soc. Vol. 29, p. 119. | MASSACHUSETTS. |
| <i>manni</i> sp. nov. | ♂ | | CALIFORNIA. |
| <i>meabilis</i> Cress. | ♀ | Can. Ent. Vol. 4, p. 64. | ILLINOIS. |
| <i>micariae</i> Harrington | ♂ ♀ | Proc. Ent. Soc. Wash. Vol. 2, p. 294. | BOR. AMER. PENN. |
| <i>minimus</i> Walsh | ♂ ♀ | Ins. Injur. Ill. p. 43. | ILLINOIS. |
| <i>minutus</i> sp. nov. | ♀ | | ALASKA. |
| <i>niger</i> Prov. | ♀ | Addit. Faun. Can. Hymen. p. 362. | CANADA. |
| <i>nigrellus</i> Ashm. | ♂ ♀ | Proc. Wash. Acad. Sci. Vol. 4, p. 192. | PRIE. ISLAND, ALASKA. |
| <i>nigrofuscus</i> sp. nov. | ♂ | | PENNSYLVANIA. |
| <i>nodosus</i> sp. nov. | ♀ | | KANSAS. |
| <i>obscurus</i> Cress. | ♀ | Can. Ent. Vol. 4, p. 62. | N. J., MASS. |
| <i>ottawaensis</i> Harrington | ♂ ♀ | Can. Ent. Vol. 28, p. 77. | PENN., CONN. |
| <i>obesus</i> Ashm. | ♀ | Proc. Wash. Acad. Sci. Vol. 4, p. 192. | ALASKA. |
| <i>pennsylvanicus</i> sp. nov. | ♀ | | PENNSYLVANIA. |
| <i>pettitii</i> Cress. | ♀ | Can. Ent. Vol. 4, p. 61. | ONTARIO, MASS. |
| <i>robustus</i> sp. nov. | ♀ | | ARIZONA. |
| <i>similis</i> sp. nov. | ♂ ♀ | | MARYLAND. |
| <i>spiraculus</i> sp. nov. | ♀ | | NORTH CAROLINA. |
| <i>sulcatus</i> Prov. | ♀ | Addit. Faun. Cab. Hymen. p. 77. | CANADA. |
| <i>stanfordensis</i> sp. nov. | ♀ | | CALIFORNIA. |
| <i>tantillus</i> Cress. | ♀ | Can. Ent. Vol. 4, p. 62. | ILLINOIS. |
| <i>thripites</i> Tay. | ♀ | Am. Agric. N. Y. (1860) p. 300. | NEW YORK. |
| <i>unicolor</i> Cress. | ♀ | Can. Ent. Vol. 4, p. 64. | MASS., DEL., ILL., MD. |
| <i>urbanus</i> Brues | ♀ | Bull. Wis. Nat. Hist. Soc. Vol. 8, No. 2, p. 67. | NEW YORK, CONN. |
| <i>utahensis</i> sp. nov. | ♀ | | UTAH. |
| <i>wheeleri</i> Brues | ♀ | Trans. Am. Ent. Soc. Vol. 29, p. 119. | ILLINOIS. |

SUB GENUS MICROMESON.

| | | | |
|---------------------------|-----|--|--------------|
| <i>annulatum</i> sp. nov. | ♀ | | MARYLAND. |
| <i>lymense</i> sp. nov. | ♀ | | CONNECTICUT. |
| <i>texanum</i> Cress. | ♂ ♀ | <i>P. texanus</i> Can. Ent. Vol. 4, p. 64. | TEXAS. |